

**REMARKS**

Applicants thank the Examiner for the very thorough consideration given the present application. Claims 1, 6, 9-11, 13-14 and 19-31 are currently pending in this application. No claims have been amended. Accordingly, no new matter has been added.

In view of the remarks herein, Applicants respectfully request that the Examiner withdraw all outstanding rejections and allow the currently pending claims.

**Issues Under 35 U.S.C. § 103(a)**

**Claims 1, 6, 9-11 and 19**

Claims 1, 6, 9-11 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaido et al. (U.S. 6,136,123) (hereinafter Kaido '123) in view of Kotani et al. (U.S. 5,700,560) (hereinafter Kotani '560) or Kotani et al. (U.S. 6,316,093) (hereinafter Kotani '093) and further in view of Fenney et al. (WO 98/56598) (hereinafter WO '598). Applicants respectfully traverse.

In response to our previous arguments, the Examiner asserts that the combination of Kaido '123 with the Kotani references (Kotani '560 and Kotani '093) is proper, even though the Kotani references are directed to food packaging, because Kotani teaches ways of improving gas barrier properties. The Examiner further asserts that the Kotani references are not directed solely to food packaging.

As to our arguments regarding Kaido '123, the Examiner asserts that a "tackifier-adhesive" is not an essential component in Kaido '123. Additionally, the Examiner asserts that

"[a]s to the presence of an inner layer in combination with the film, it is not clear that Kaido et al. fails to suggest this".

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, there must be a reason why one of ordinary skill in the art would modify the reference or combine reference teachings to obtain the invention. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). There must be a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* The Supreme Court of the United States has recently held that the "teaching, suggestion, motivation test" is a valid test for obviousness, albeit one which cannot be too rigidly applied. *Id.* Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *Id.*

The present inventions is directed, *inter alia*, to a tubeless tire including a tire body, an air chamber and a rim, wherein a gas barrier layer formed from a resin composition is disposed on an inner face of a tire body, and an inner layer is formed on said inner face of said tire body. The resin used to mask the gas barrier resin composition may be a resin selected from the various examples recited in claim 1, such as a resin formed from polyvinyl alcohol or a polysaccharide. The gas barrier resin composition also includes an organic layered compound having a particle

size of at most 5 mm and an aspect ratio of 50 to 5000. The inner layer comprises a rubber composition containing as rubber components 60%-100% by weight of at least one kind of butyl rubber and 0-40% of at least one kind of diene rubber.

Kaido '123 is directed to a process of production of a pneumatic tire, using a thermoplastic film as an air permeation preventive layer. Kaido '123 fails to disclose or suggest the use of an inorganic layered compound having a particle size of at most 5 mm and an aspect ratio of 50 to 5000, as presently claimed. Kaido '123 further fails to disclose or suggest the use of the combination of a gas barrier layer with an inorganic compound together with an inner liner layer formed on the inner face of a tire body. Furthermore, as previously discussed, Kaido '123 requires the presence of a "tackifier-adhesive" composition layer in order to join the thermal plastic film to the tire. Although the Examiner states that a tackifier-adhesive composition is not required in Kaido '123, the Examiner's attention is directed to Kaido's claim 1 (col. 18, line 3), where it is explicitly disclosed that a tackifier-adhesive composition is applied to the tire. A corresponding adhesive layer is not required by the present invention. Thus, Kaido '123 fails to disclose or suggest a tubeless tire as presently claimed. Kotani '560, Kotani '093 and WO '598 fail to cure these deficiencies.

Kotani '560 and Kotani '093 relate to gas barrier resin compositions used for the preservation of foods. Although the Examiner asserts that the Kotani references are "not limited to food applications", Applicants submit that these references are far removed from a tubeless tire and cannot be combined with Kaido '123 or any other of the cited references. The Examiner's attention is directed to Kotani '560 at column 11, lines 17-25, which discloses the following:

*"That is to say, the resin composition of this invention can be used in the form of a film in packaging miso, sliced dried bonito, confectionery, noodle, ham, sausage, boiled rice, curry, stew and the like; in the form of a bottle as a squeeze bottle for mayonnaise or a container for juice, soy source, source, edible oil and the like..."*

Clearly, the Kotani references are directed to a non-analogous art. To rely on a reference under 35 U.S.C. 103, it must be analogous prior art (*see* MPEP 2141.01(a)). "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). Applicants respectfully submit that one of ordinary skill in the art, seeking to solve a problem relating to a tubeless tire, would certainly not be expected or motivated to look to noodle and ham packaging. The Kotani references are not pertinent to the particular problem addressed by the present inventors.

As to WO '598, this reference discloses barrier coating mixtures used for the inner surface of tires which include: (a) an elastometric polymer, (b) a dispersed exfoliated layered filler having an aspect ratio greater than 25, and (c) at least one surfactant. WO '598 fails to disclose or suggest any of the various resins employed in the gas resin composition used in the tire of the present invention. Furthermore, WO '598 fails to disclose or suggest the use of the combination of a gas barrier layer and an inner liner layer formed on the inner face of a tire body, as presently claimed.

Applicants submit herewith a Declaration Under 37 CFR 1.132. In the Declaration, the tire disclosed by WO '598 has been reproduced (said tire corresponding to Applicants' Comparative Example 39), and compared to Applicants' Example 16. Furthermore, Applicants' Example 1 and Comparative Example 6 are discussed for the Examiner's benefit. As evidenced by the enclosed Declaration, the air permeability coefficient, rate of decrease in pressure and rate of decrease in tire pressure after machining are all substantially deteriorated when an inorganic layered compound is not contained in a gas barrier layer, as presently claimed.

Evidently, the cited references, alone or in combination, fail to teach or suggest every limitation of the instant invention. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

#### **Claims 13, 14 and 20-31**

Claims 13, 14 and 20-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaido '123 in view of Kotani '560 or Kotani '093 and further in view of WO '598, Kresge et al. (U.S. 5,576,372) (hereinafter Kresge '372) and Hopkins et al. (U.S. 2001/0009948) (hereinafter Hopkins '948). Applicants respectfully traverse.

As to claims 13, 14 and 20-23, Applicants respectfully submit that these claims are allowable at least for the same reasons discussed above in regards to independent claim 1. Kaido '123 in view of the Kotani references and WO '598 fail to teach or suggest a tubeless tire including a tire body, an air chamber and a rim, wherein a gas barrier layer formed from a resin composition is disposed on an inner face of a tire body, and an inner layer is formed on said inner face of said tire body. Kresge '372 and Hopkins '948 fail to cure these deficiencies.

As to claim 24 and dependent claims thereof, Applicants submit that the Examiner has failed to establish a *prima facie* case of obviousness. Claim 24 is directed to a tubeless tire wherein an air chamber is formed between an inner face of a tire body and a rim thereof, a gas barrier layer is formed of a gas barrier resin composition which contains an inorganic layered compound having a particle size of at most 5  $\mu\text{m}$  and an aspect ratio of 50 to 5000, and a resin is formed on an inner face of a carcass layer, said carcass layer comprising a rubber composition containing a rubber component, an inorganic layered compound, an inorganic filler and a silane coupling agent. The inorganic filler is represented by  $n\text{M}\cdot x\text{SiO}_y\cdot z\text{H}_2\text{O}$ , wherein  $n$  represents an integer of 1 to 5,  $M$  represents at least one metal selected from Al, Mg, Ti and Ca, or a metal oxide, metal hydroxide or metal carbonate thereof,  $x$  represents an integer of 0 to 10,  $y$  represents an integer of 2 to 5 and  $z$  represents an integer of 0 to 10. In the embodiment encompassed by claim 24, the inorganic layered compound has a particle size of at most 5  $\mu\text{m}$  and an aspect ratio of 50 to 5000, and is dispersed in the rubber component. Other embodiments require that the inorganic layered compound of said gas barrier layer be a clay mineral having swellability (claim 25), that the inorganic layered compound be dispersed in said resin or a resin solution in a state of being swelled or cleaved in a solvent (claim 26), and that the inorganic filler be present at specific concentrations (claims 28 and 29).

The cited references fail to teach or suggest the combination of an inorganic layered compound and a gas barrier layer. Although the Examiner asserts that WO '598 discloses "a similar tire that includes a coated gas barrier film on the inner surface and in particular suggests an understanding in this art of the suitability of both application to a butyl innerliner as well as coating the carcass rubber directly without an innerliner", Applicants submit that WO '598 does

not teach or suggest the presently claimed combination of an inorganic layered compound and a gas barrier layer.

As evidenced by the enclosed Declaration, the air permeability coefficient, rate of decrease in pressure and rate of decrease in tire pressure after machining are substantially improved by adding an inorganic layered compound to a gas barrier layer, as presently claimed. The presently claimed tubeless tire comprising a gas barrier layer which contains a specific inorganic layered compound and resin exhibits excellent air maintaining properties and can maintain a stable air pressure over a long period of time. The tire disclosed by WO '598 (corresponding to Comparative Example 39) exhibits poor pressure decrease rates and air permeability coefficient.

Evidently, the cited references, alone or in combination, fail to teach or suggest every limitation of the instant invention. Accordingly, this rejection is improper.

Reconsideration and withdrawal of this rejection are respectfully requested.

### **Conclusion**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and objections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Andrew D. Meikle, Reg. No.

32,868 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: September 10, 2007

Respectfully submitted,

By 

Andrew D. Meikle

Registration No.: 32,868

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Road

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant

Attachment: Executed Declaration Under 37 CFR 1.132